

## **Abstract**

Location-based data is becoming more and more integrated into our society from internal navigation to food delivery services. Even the collection of positional data once only collected by professionals with survey equipment is now achievable by anyone with a smartphone. Several studies have looked at the positional accuracy of different smartphones and found that they are not as accurate as dedicated GPS receivers are. Previous research has also shown that positional accuracy in smartphones changes when exposed to adverse conditions like building shadows, tree cover, and canyons.

The aim of this study was to see if the use of a Broadband Global Area Network (BGAN) terminal could consistently improve the positional accuracy of a smartphone, and if that improvement was consistent when exposed to adverse conditions. An experiment was designed and used to test the pairing of these devices using NGS benchmarks and historical landmarks as control points. Findings show that the use of a BGAN terminal does influence the positional locations of the smartphone but not in a consistent manner. At some sites, the smartphone improved in its positional accuracy when the BGAN signal was introduced but at others, there was a decrease in positional accuracy. These mixed results lead to no definitive conclusions reached beyond recommendations for future testing.